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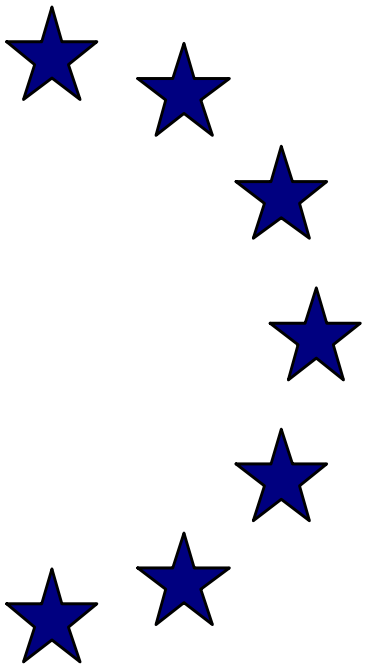

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Exchange rates are a matter of common concern: policies in the run-up to the euro?

by

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Abstract

This paper discusses the reasoning behind the exchange rate policies set out in the Maastricht Treaty of the European Union. The question of the appropriate exchange rate policies for new member states of the EU should be seen from the wider perspective of Economic and Monetary Union, and the creation of a single market. Four basic arguments are made in defence of the current exchange rate framework: (i) it is argued that exchange rate stability, per se, may be desirable if that is seen from the broader perspective of European integration, (ii) exchange rate stability is vital for countries attempting to lock permanently their exchange rate vis-à-vis the euro at a given parity, (iii) exchange rate stability prevents unilateral changes in the exchange rate that may delay partner countries' convergence relative to the Maastricht criteria, and finally (iv) a period of "internship" inside the Exchange Rate Mechanism ensures that countries begin adjusting their behaviour/policies to the requirements of a common currency area.
A necessary condition for stability inside the ERM II is that countries maintain prudent, particularly fiscal, policies and proceed with structural reforms that enhance the flexibility of the economy. The analysis is a one-sided defence of limited exchange rate flexibility under the "current circumstances": i.e., the process of convergence in terms of the Maastricht criteria and the final adoption of the euro.

Introduction

Economic policy coordination lies at the heart of monetary unification in the European Union. Monetary union itself is considered a cornerstone to the more ambitious project, namely that of the creation of a common market in Europe. The establishment of a common market for goods and services within Europe must therefore be seen as the ultimate objective, and in this context free trade for goods and services, the adoption of a single currency, and enhanced policy coordination, are merely the foundations for achieving the ultimate, grand goal.

At the core of policy coordination in the EU is the Exchange Rate Mechanism, which sets out the formal framework for coordination of exchange rate policies. The ERM was formed in 1979 as an attempt to create a zone of exchange rate stability and enhanced policy coordination, which would prove essential prior to the introduction of a single currency in Europe. The ERM went through different phases since 1979, and the ERM II was set up in the 1990s in the run-up to the introduction of the euro to cope with the convergence of countries that did not (yet) join the euro area. The basic difference between the original system and the ERM II is that the latter is centered around the euro, rather than the ECU, while the official fluctuation bands are also considerably wider (see Box 1).

In addition to enhancing exchange rate stability in Europe, the ERM served an another valuable role during the high inflation years throughout the 1980s by providing a nominal anchor for countries and thereby strengthening their disinflation efforts. Overall, it is fair to say that the system was successful, especially after the turbulent first years after its inception, in pinning down inflationary expectations and creating a zone of exchange rate stability. Views of course differ and the topic has been extensively debated (see Giavazzi and Giovannini, 1989, and De Grauwe and Papademos, 1990, and references therein.) After the dramatic exit of the United Kingdom from the ERM in 1992—and the shift in

many countries to inflation targeting regimes,—and as a result of receding inflationary pressures in most ERM countries, the focus shifted toward more exchange rate flexibility (for a post-1992 discussion see Artis and Lewis, 1993, for example.) This is to be explained, to some extent, by the fact that inflation rates had come down considerably, thus providing room for exchange rates to adjust prior to the commencement of the third stage of EMU. The ERM II was seen as providing room for more flexibility, while at the same time continuing to shield countries from myopic exchange rate policies and, more importantly, large swings in exchange rates driven by speculative flows.

The current position of the EU is that participation in the ERM II "…will help to ensure that Member States that are outside the euro-area participating in the mechanism orient their policies to stability, foster convergence and thereby help them in the their efforts to adopt the euro…" [2] More importantly, the Council's decision of June 1997, on the establishment of the Exchange Rate Mechanism (ERM) in the third stage of EMU, states that "the single market must not be endangered by real exchange rate misalignments, or by excessive nominal exchange-rate fluctuations…"

Exchange rate stability is therefore seen as important both in terms of achieving, and facilitating, a single European market, but is also regarded as an important test for participation in the euro zone. Countries must learn to live in an environment of exchange rate discipline and refrain from pursuing "beggar-thy-neighbour" policies that can slow down other countries' convergence, and hence delay adoption of the euro. The Treaty states explicitly that "Member states shall regard their economic policies as a matter of common concern and shall coordinate them within the Council…" (Article 99 EC Treaty).

Implicit in these statements is also the opinion that sizeable changes in the value of the exchange rate of one country that are not supported by economic fundamentals (i.e., the emergence of speculative bubbles) are likely, and should be prevented in the run-up to the adoption of the euro. Hence, the ERM II can be thought of as an insurance policy for

[2] European Council, 16 June 1997.

countries wishing to join the euro zone at a desirable exchange rate parity. It is argued that participation in the ERM II may provide considerable exchange rate stability, especially given the provision for unlimited intervention at the margin by the ECB and the country in question.

In this paper we review the rationale behind the requirement that countries should participate in the ERM II for a period of, at least, two years prior to them adopting the euro. The analysis focuses on the 10 new members of the EU only, purely as the case for these countries joining the ERM II will become more pressing soon. We ask whether exchange rate stability, per se, is good and whether the participation in the exchange rate system should instead be seen as a learning period before the irrevocable fixing of exchange rates, and/or as a protection shield against irrational bubbles and speculative attacks. We also show that exchange rate flexibility, and in particular unilateral exchange rate actions by a country, or a group of countries, may interfere with other countries' chances of meeting the Maastricht criteria. Needless to say that the ERM II is only a small, albeit important component, of the much broader policy coordination apparatus of the EU and it should also be interpreted along these lines.

Although we recognize that there are risks when adopting a fixed exchange rate we consider that these risks have diminished considerably, particularly as has become clear that these countries' ultimate goal is the adoption of the euro. We further argue that these countries have also been exposed to sizeable capital flows during their recent histories, and have coped relatively well in terms of their policies. In addition, recent institutional changes (e.g., the establishment of independent central banks, the commitment to sound fiscal policies in the context of EU fiscal policy coordination) should also contribute to more macroeconomic stability and hence contribute to exchange rate stability inside the ERM II.

Needless to say that the success of this strategy rests on the commitment by countries to maintain prudent policies, and carry on with their structural reform programs. But it should also be noted that "participation in ERM-II should help achieve real and nominal

convergence, and should not be seen as a mere waiting room for the adoption of the euro" (Economic and Financial Committee, 2003). However, once it is deemed that enough progress has been achieved with regard to macroeconomic policies—particular fiscal consolidation—and structural reforms, participation in the ERM II will serve as a vehicle for preparing, and a criterion for readiness, for the adoption of the euro. Experience suggests that under such conditions exchange rate variability could decline significantly, facilitating greatly the adoption of the euro. Hence, participation in ERM II should not be considered as an *ad hoc* test for exchange rate stability, but instead should be seen as an opportunity to achieve meaningful macroeconomic, and policy, convergence prior to the adoption of the euro, prepare for the single monetary policy framework, and create conditions that are conducive to trade creation and growth inside the European Union.

Box 1: The Exchange Rate Mechanism II

(Statement by European Council, November 2000, See European Commission, 2001)

- Prior to accession, there are no formal restrictions on the choice of an exchange rate regime, with the exception of euroisation, which is explicitly prohibited.
- Upon accession, new Member states shall treat their exchange rate policy as a matter of common concern.
- After accession, although not necessarily immediately, accession countries are expected to join the ERM II.

Key Features of the ERM II

- Stable but adjustable central rates to the euro.
- Fluctuation bands of ±15 percent around central rate, although on a case-by-case basis, formally agreed fluctuation bands narrower than the standard one and backed up by official intervention and financing, may be set up.
- A new Member State may join ERM II, upon request, at any time after accession, subject to the agreement on the central parity and size of fluctuation bands.
- However, the ECB may decide to suspend interventions if it is deemed that these actions interfere with the primary objective of price stability.

Adoption of the Euro

- "The criterion on participation in the exchange rate mechanism …shall mean that a Member State has respected the normal fluctuation margins provided for the by the European Monetary System without severe tensions for at least the last two years before the examination."
- In particular, the "Exchange rate to have been maintained within a fluctuation band of ±2.25% around the currency's central parity against the euro in the context of the ERM II. However, to the extent to which a breach of the ±2.25% fluctuation band would correspond to severe tensions would take into account of a range of relevant considerations. A distinction is to be made between exchange rate movements above the 2.25% upper margin and movements below the 2.25% lower margin." (Annex D.3, European Commission, 2000, 2002e)

Exchange Rate Stability is Good Anyway

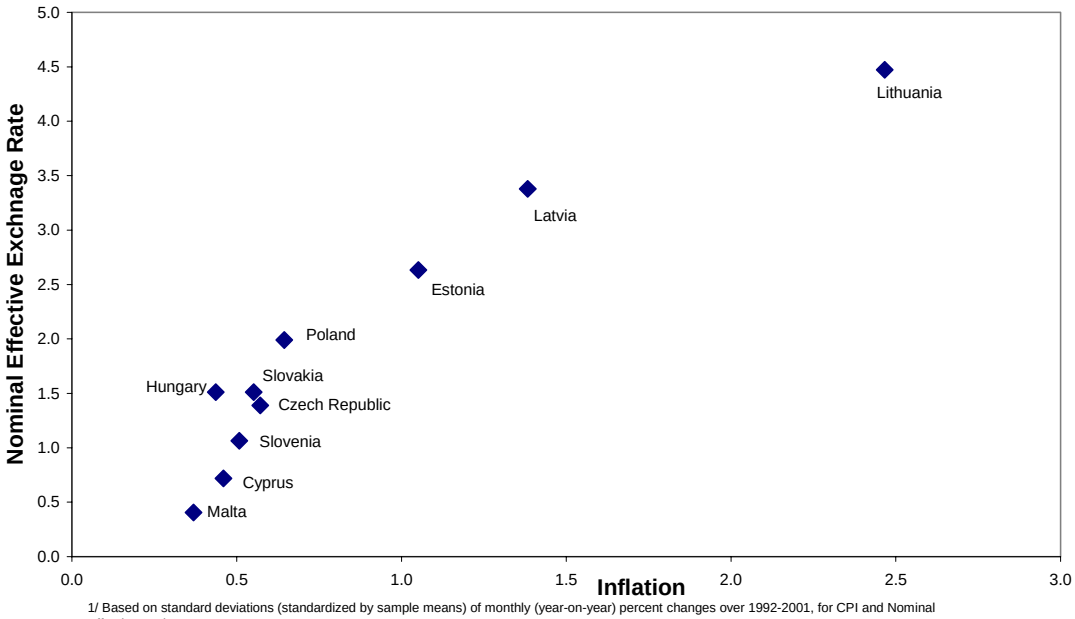
Is exchange rate stability the ultimate objective of policy makers, or, is it simply viewed as an intermediate target? In this section we discuss to what extent exchange rate stability, per se, is good. We look at this question from two angles. Firstly, from the wider perspective of the establishment of a common market. Secondly, from the point of view of macroeconomic stability.

From a broader standpoint, exchange rate stability is desirable for the smooth functioning and deepening of a single European market (e.g., free movement of goods). Recent evidence confirms that exchange rate uncertainty can have a negative impact on international trade, and particularly trade among European countries (for example Dell'Ariccia, 1999, and references therein). This empirical evidence suggests that a total elimination of exchange rate uncertainty should boost bilateral trade, on average, by some 3-4 percent.[3] Such an improvement is in addition to the direct positive effects that EU membership also brings to intra-EU trade. These positive effects on trade, albeit rather small, are still non-negligible and should be of considerable concern to policy makers.

Sizeable exchange rate fluctuations may be associated with excessive inflation variability. This is especially true for small, open economies. Inflation variability can be undesirable if it leads to greater variability of relative prices, which may prevent the smooth functioning of the price mechanism (see Driffill, et al, 1990, on the debate regarding the costs of inflation). More inflation variability is also often associated with more inflation uncertainty and in some cases can be the cause of higher inflation. Figure 1 shows that, al least for the ten countries in question, there appears to be a striking correlation between exchange rate variability and inflation variability.[4]

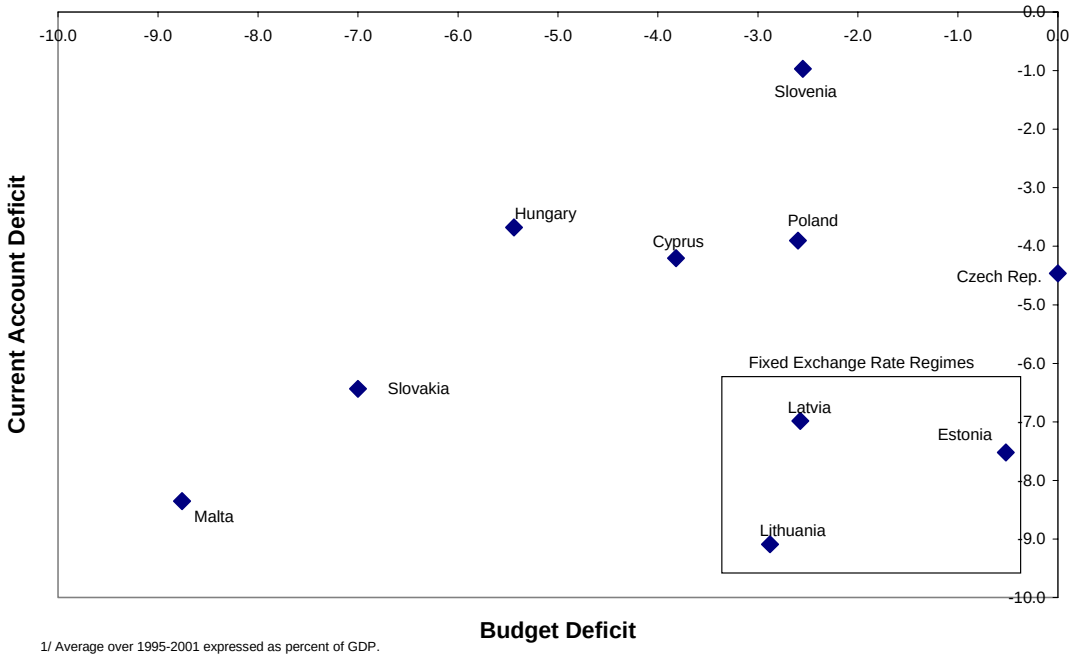
[3] Rose (2000) also showed that lower exchange rate volatility does increase trade, but the effect of a common currency is significantly stronger (see Rose, 2000, 2001, and more references therein).
[4] Bordo and Schartz (1999) recently have analyzed the performance of several indicators across different monetary policy regimes. In their words "An important distinction between a convertible or fixed anchor regime (or even one dedicated to price stability) compared to an inconvertible regime (or one following an inflation target) is lower long-run price uncertainty."

Figure 1. Exchange Rate and Inflation Variability 1/



1/ Based on standard deviations (standardized by sample means) of monthly (year-on-year) percent changes over 1992-2001, for CPI and Nominal Effective Exchange Rates

Figure 2. Budget, and Current account deficits 1/



1/ Average over 1995-2001 expressed as percent of GDP.

Exchange rate stability might discipline policymakers into following more prudent fiscal policies. In a small open economy an expansionary fiscal policy is usually mirrored by a widening current account deficit that, sooner or later, puts pressure on the exchange rate. There are two channels through which fiscal policy affects the exchange rate. First, the direct import effect whereby government purchases increase imports directly. This is certainly the case in most of these, relatively small, economies and should be expected to put a downward pressure on the exchange rate. The second is the exchange rate channel according to which a budget deficit leads to a reduction in aggregate savings relative to investment demand, a rise in the real interest rate, and consequently capital inflows and exchange rate appreciation (see Krugman, 1995, and Branson 1985, for example). A constraint on the exchange rate should, in principle, act as a disciplinary device on the fiscal authorities, or more generally on economic policies.

In currency unions, or in multilateral exchange rate arrangements, the issue of negative externalities—that loose fiscal policy might have on other member states—might also enhance fiscal discipline.[5] Participation in the ERM II would then add an additional constraint that comes from the negative effects that each country's policies might have on the rest of its partners.

Recent empirical work on this subject shows that fiscal authorities do actually tend to be more conservative in countries that have adopted currency boards, or are participating in multilateral currency unions (Fatas and Rose, 2001, for example). Regarding the new EU member states, Figure 2 shows that there appears a loose association between the size of budget deficits and that of the current account.[6] Notice that the two countries, which have been operating a currency board over the last few years—Estonia and Lithuania,—are ones that appear to be clear outliers. Latvia, also in a similar position has also followed a pegged exchange rate system, albeit relative to the SDR.

[5] The Stability and Growth Pact instituted by the EU has also been interpreted in this fashion (see Eichengreen and Wyplosz, 1998, for example).
[6] Although it is hard to make a strong case given that current account deficits in some of these countries are also explained by imports of capital goods, and funded through sizeable FDI flows.

Exchange rate stability is also often associated with a stable macroeconomic environment that is conducive to investment, including from abroad, and hence growth. An unwarranted exchange rate shock may affect negatively growth prospects and hurt confidence in the market. There is ample evidence that unanticipated monetary policy shocks lead to sizeable changes in the exchange rate that, in turn, spillover to the trade balances, and GDP growth. The evidence on the response of output to exchange rate shocks is documented in a number of studies (see Clements et al, 2001, and Angeloni et al, 2002, for example and several references therein particularly relating to other international studies). The potency of this channel increases with the degree of openness to trade. In addition, exogenous exchange rate shocks (i.e., not related to monetary policy actions in the home country) can also be destabilizing. For example, an unanticipated monetary policy shock in another country may have negative effects on domestic output and inflation.

Finally, a fixed exchange rate system may be of benefit to countries with less-developed or illiquid financial markets. Without underestimating the risks that such a practice entails, a fixed exchange rate system limits the exchange risk and encourages foreign borrowing by domestic residents. Indeed, the lack of depth in the financial markets in these countries suggests that these benefits could be significant. Hence, by temporarily removing this market imperfection countries may benefit through faster growth and real convergence with the rest of the EU. Estonia stands out as a notable example in that regard. Given the success of the currency board over the last ten years, foreign borrowing has increased steadily and has, to some extent, provided vital liquidity to the domestic market.

Exchange Rate Bands: An Insurance Policy for EMU

As countries prepare for membership into the euro area, one major concern will be to ensure that the exchange rate level, that will prevail on the day that the rates are irrevocably fixed, is consistent with economic fundamentals. "The criterion on participation in the exchange rate mechanism …shall mean that a Member State has respected the normal fluctuation margins provided for by the European Monetary System without severe tensions for at least the last two years before the examination." (Article 121, EC Treaty). As the statement reveals, it is envisaged that a stay inside the ERM II, for at least two years without any "severe tensions", shall constitute evidence that the chosen parity is indeed consistent with fundamentals.

The alternative would be that exchange rates are allowed to float freely, and to adjust in line with the evolving fundamentals. It is often argued that the process of real convergence requires considerable exchange rate flexibility and fixing completely the exchange rate will force, alternatively, adjustment of prices and/or output. The negative impact on these countries' growth prospects may delay the process of real convergence and complicate the stetting of monetary policy.

While the latter is a valid line of reasoning, we argue that such a strategy also involves significant risks. In particular, under a floating exchange rate regime there is no guarantee that exchange rate dynamics will move consistently in line with developments in the fundamentals. Hence the remainder of this section describes a number of potentially destabilizing events that may interfere with the determination of a "favourable" exchange rate level. It is argued that participation in the ERM can be thought of as an insurance policy that countries should obtain in order to ensure that, at the time of fixing the exchange rates to the euro, the market rate does not differ significantly from the rate that is seen as favourable from a long-term viewpoint.

Exchange rate dynamics can be self-sustaining over considerable periods of time and can therefore lead to unjustifiable changes in exchange rates even under conditions of

macroeconomic stability, and fiscal prudence. As Frankel and Rose (1994) point out, exchange rate movements cannot, in general, be explained by economic fundamentals (see Box 2 for more on bubbles). Speculative bubbles can drive a wedge between spot, and equilibrium exchange rates. On the contrary, official interventions within a target zone system—such as the ERM II—underpinned by credible policies can short-circuit the dynamics of bubbles, pin down expectations and eliminate excessive exchange rate volatility. Spillovers from other asset bubbles, in a world of free capital flows, may also trigger exchange rate misalignments. An example of this is the recent increase, and subsequent collapse, of US equity prices and the ensuing fall in the value of the dollar.

Exchange rates may also overshoot their equilibrium levels and such disequilibria may persist for considerable time. In his classic paper Dornbusch (1976) demonstrated that in the short-run nominal exchange rates may overshoot their long-run levels. Under this setup an unanticipated increase in the nominal money supply—in the presence of short-run price rigidities—requires an exchange rate overshooting (depreciation), and a subsequent appreciation that will put downward pressure on interest rates, and hence boost money demand; bringing about the new equilibrium in the money market. One of the predictions of the model, specifically that—for a fairly general set of assumptions—the real exchange rate and the real interest rate differential should be positively correlated (i.e., that high interest real rates will push the real exchange rate higher), does seem to hold over long periods suggesting that such exchange rate behaviour cannot be dismissed (see Rogoff, 2002, for a recent exposition of the model, for example.)

Box 2: Exchange Rate Bubbles

A well known finding in empirical studies of the exchange rate determination is that a wide range of standard models—including models with fundamentals and flexible or sticky prices, portfolio balance models, or specifications that include news among other variables,—score poorly in out-of-sample forecasting compared with a simple random walk model (i.e., a model that assumes that the exchange rate is a simple function of last period's exchange rate and a random shock). Consequently, this evidence points to the fact that economic fundamentals—including money supply, interest rates, inflation, GDP, current account balances—contain little information that is useful for predicting exchange rates in the short- and medium-term. If this finding is taken seriously then there are two possible explanations that may account for the failure of traditional model to account for the variability of exchange rates (Frankel and Rose, 1994, for example). Either exchange rates are purely driven by real/unobservable shocks (e.g., productivity shocks, or shocks in tastes), or speculative bubbles drive exchange rate dynamics (see also Obstfeld, 1996, for example). The second possibility is indeed important.

A number of studies have actually attempted to test for the presence of bubbles in the foreign exchange market and have reported some evidence in favor of exchange rate bubbles (Meese,1986, Evans, 1986, for example). Although Frankel and Rose (1994) argue that these studies, and more general any work on the topic, cannot help establish beyond any reasonable doubt the existence of a bubble—or accept the alternative hypothesis of unknown/unobservable fundamentals, or missing variables—they also recognize the fact that exchange rate variation cannot be explained with most models of fundamentals is, to some extent, consistent with the existence of bubbles.

Finally, it is worth emphasizing the link between equity market bubbles and exchange rate bubbles. The recent experience from the stock markets suggests that there could be a strong association between the equity bubble that developed in the 1990s, and burst in 1999-2000, and the behavior of the dollar exchange rate over the same period. This would be obvious in a world with liberalized capital flows (see Ventura, 2002, for a discussion on related issues). Under these circumstances the risk that exchange rate misalignments occur, and persist, seems more plausible.

Foreign exchange market volatility—enhanced, very often, by short-term speculative flows—can also have a destabilizing effect on a country's exchange rate. Indeed, exchange rate fluctuations among the major world currencies can exacerbate current account imbalances in emerging countries, and affect the ability of countries to service foreign debt. Countries may be also affected directly, or indirectly, by currency crises in another country, or part, of the world. In these cases, the exchange rate dynamics can be disrupted imposing significant costs to countries; particularly, to ones that aim to fix permanently their exchange rate relative another currency.

On the contrary, a target zone can be inherently stabilizing with the expectations of future interventions stabilizing the current exchange, even more than the underlying fundamentals (see Krugman, 1991, and Gerber and Svensson, 1994, for references on the vast literature regarding the empirical research on the topic). In his seminal paper Krugman (1991) showed how the exchange rate behaves differently within a perfectly credible target zone compared with a free float. When the exchange rate appreciates and is close to the upper band of a target zone, the probability of an intervention increases and that slows down the rate of appreciation. Hence, when a future depreciation is expected that is immediately discounted by the market and the exchange rate immediately changes accordingly—sometimes referred to as the "honeymoon" effect.

It could be argued that the risk of a speculative attack inside a fixed exchange rate regime does not disappear completely; or the nature of risk changes. That is certainly true although the ERM II arrangement is flexible enough, in terms of the size of the fluctuation bands and more importantly the possibility of realignments—which can be requested, among others, by the Member State, or the ECB,—to be able to cope better than its predecessor with such events. Finally the size of the available reserves inside the ERM II increases drastically, relative to the size of the countries, and that in itself may also act as a deterrent against "one-way" bets.

Note that the above discussion rests on the very strong assumption that policy makers know with certainty the "equilibrium" exchange rate and are therefore better-off choosing

that rate rather than allowing the market to determine an alternative rate which could inconsistent with the economy's long-run dynamics. That is a strong assumption, although from the policymakers' viewpoint, macroeconomic stability, the health of the financial system, fiscal consolidation and market liberalization are prerequisites for countries that wish to gradually fix their exchange rates to the euro and eventually join the euro area, and these policies should eventually ensure the consistency of the exchange rate with the long-run fundamentals. Under these circumstances, the country will eventually achieve domestic and external balance and the exchange rate should gradually find its long-run equilibrium path.

The ERM as a Policy Coordination Tool

The theory on international policy coordination, which flourished in the 1980s, emphasized the efficiency losses that arise from "beggar-thy-neighbour" policies. Under freely floating exchange rates a non-cooperative equilibrium can be inefficient since each country perceives an unrealistically favourable unemployment-inflation tradeoff. By setting monetary policy—taking into account other countries' policies as given—a country believes it can affect the money supply and the exchange rate. For example, an exchange rate appreciation can lead to lower inflation at a lower cost in terms of output loss (the country literally exports inflation to its partners). If every country behaves in a similar way, the exchange rate will remain unchanged (assuming countries have similar sizes) and output will decline. By recognizing the spillover effects of monetary policy countries can avoid these negative costs and coordination is the first-best policy response (see Cooper, 1985, for example, and references therein). The exchange rate mechanism and the ERM II, may certainly be justified from this angle. Strict exchange rate arrangements "tie the hands" of the politicians, and of policy makers, and minimize the possibility of myopic "beggar-thy-neighbour" policies.

More importantly, the exchange rate mechanism should be also seen as part of a broader policy coordination apparatus that includes fiscal policy coordination at its centerpiece (Box 3). Fiscal policy coordination would be relatively weak, if not ineffective, under a

regime of fully flexible exchange rates and this is especially true for small, open, economies where there is a close correspondence between fiscal deficits, current account deficits and exchange rate movements.

However, in the context of the accession countries, and the roadmap for membership in the euro zone, a second related issue is significant. Since, countries have to "perform" in terms of the Maastricht criteria for inflation, interest rates, budget deficits and debt levels, competitive devaluations (or revaluations) are likely to hurt (some) countries' chances of meeting these criteria on time, and hence are unwarranted from an institutional viewpoint. Table 1 shows the likely effects of such a possible devaluation on the chances of (still) meeting the Maastricht criteria. A unilateral devaluation by one country will lead to deterioration in the trade balance of partner countries. This in turn will affect negatively GDP growth, and possibly the budget deficit. Inflation should accelerate in the devaluing country, but slow down in the partner country. Hence, at least in theory, such a unilateral action will affect the countries' chances of meeting the Maastricht criteria. This is examined quantitatively in more detail below.

In what follows we attempt to quantify the implications of unilateral exchange rate actions by one country on the other countries aspiring to adopt the euro. In this hypothetical experiment we focus on conditions that might prevail during the process of convergence, with respect to the Maastricht criteria, in the absence of an exchange rate criterion, and hence of the ERM II. We examine the extent to which a unilateral change in the exchange rate will have an effect—via the trade channel—on the trade balances, output growth and inflation of the countries that are preparing to adopt the euro. The experiment examines only the likely, maximum, impact effect through bilateral trade flows and not the second round, and third country, effects that might also arise. This exercise is likely to present us with broad, ballpark estimates that are useful for

Box 3. Pre-Accession Country Surveillance, and Policy coordination

The policy coordination/country surveillance apparatus set up by the European Commission for accession countries, and new Member States centers around four basic elements:

1. The Fiscal notification system whereby accession countries report to the commission services debt and deficit figures calculated in accordance with the EU methodology based on the ESA 95 system of national accounts. Fiscal notifications use the same format, and require countries to submit the same data, as the fiscal notifications provided by Member States in the framework of the Excessive Deficit Procedure (see European Commission Enlargement Paper 13, 2002).

2. The Pre-accession Economic Programs include a detailed description of the plans of the authorities in the areas of fiscal, and structural reform and a medium-term fiscal plan Procedure (see European Commission Enlargement Paper 14, 2002).

3. The reports on the macroeconomic and financial sector stability developments in candidate countries (see European Commission Enlargement Paper 11, 2002).

4. The European Commission publishes on a bi-annual basis macroeconomic forecasts for the candidate countries (see European Commission Enlargement Paper 12, 2002).

Form the European Central Bank's side, there are regular meetings between the ECB and candidate countries which center around the need to bring financial/payment systems in line with those in the eurosystem and to ensure a smooth transition into the euro area.

highlighting the compatibility of the alternative scenario—of fully flexible exchange rate—with the remaining three Maastricht criteria.

The data used are bilateral trade figures for the ten acceding countries. The question of interest here is to what extent the bilateral trade flows are significant and therefore likely to constitute a significant channel through which a currency devaluation might affect the bilateral trade balances of partner countries. The experiment involves a 20 percent unilateral devaluation of the exchange rate of a given country (each one in turn) against the euro. It is assumed that the other nine countries continue, for at least the short-term, to maintain their exchange rate parity against the euro, and hence that simply implies a change in the bilateral exchange rate against each of the candidate countries.

Table 2 shows estimates of the possible maximum impact on the trade balance and hence GDP growth rate—assuming that all the other variables (e.g., private consumption, investment and government spending) remain unchanged,—and inflation. Each column denotes the devaluing country and on each row we tabulate the effect on a particular partner. For example, if the Czech Republic were to devalue its exchange rate vis-à-vis the euro by 20 percent, the trade balance of Slovakia, Slovenia, Estonia, Latvia, and Malta would deteriorate by some 1/4 percent of GDP, and that of Cyprus by almost 1/3 of 1 percent of GDP.

The effects are based on a long-run, unit, elasticity of exports and imports on relative prices. Relative prices are assumed to change proportionally to the change in the exchange rate, while the inflationary effects of a devaluation are not taken into account in the calculations: essentially, it is assumed that a 20 percent nominal devaluation will have the same effect on the real exchange rate. Table 3 repeats the same exercise but takes into account of the likely impact on the bilateral real exchange rate of the higher inflation in the devaluating country. In this case the spillovers are lower, as it should be expected, given that the relative price change is smaller. Overall, all these simulations are based on a partial equilibrium analysis and assume all other variables remain unchanged

The effects on the trade balance and current account can be substantial for some countries. Bilateral trade flows, among some of these ten countries, are sizeable and hence the spillover effects quite strong. Given that most countries are relatively small and open (i.e., the share of total trade to GDP is high) the impact on GDP growth can be substantial. It is estimated that a devaluation can have significantly negative effects on the trade balance—and hence GDP growth—for a number of, particularly, smaller countries (e.g., Cyprus, Malta, Latvia, Estonia, Slovakia, and Slovenia). These effects range from 1/3 and 1/2 of 1 percent for the smaller countries, and between 0.1 and 0.2 percent for the bigger economies. The effects are significant particularly if one were to take into account of the likely second round affects to employment and consumption.

Table 2 also tabulates estimates of the likely effects on inflation based on the assumption of complete pass-through from exchange rate changes to prices, using the share of imports to GDP as an indication of the weight of tradable in the consumer price basket. This working assumption—which is by no means a realistic one—allows us to obtain an upper bound for the impact on inflation. Since inflation in these countries is likely to decelerate, following a devaluation shock by a partner country, the magnitude of the could be sizeable reaching in some cases 2 percent (for example in the case of the Czech Republic and Slovakia), but generally varying between 1/3 and 1/2 of 1 percent.

The effects of the exchange rate shock on the other variables of interest can also be roughly quantified. For example, a 1 percent fall in GDP growth is associated with a 1/4–1/2 percent of GDP deterioration in a country's budget deficit (see Brunila et al, 2002, for estimates of elasticities). For example, a devaluation by Poland could lead to deterioration in the general government deficit of the Cyprus by some 0.15 of 1 percent of GDP, and of Estonia, Latvia Malta, Slovenia and Slovakia by some 0.1 percent of 1 percent of GDP. These effects are nontrivial, especially when countries are trying to keep budget deficits in check in order to meet the Maastricht criterion for budget deficits.

The effects on interest rates are hard to measure, although one would expect that, ceteris paribus, given the lower import prices and hence inflation, and the GDP weaker growth

interest rates could decline. However, the increase in the budget deficit should be expected to have the opposite effects, and such an unwarranted outcome could be significant for those countries that are hardest hit.

Besides these cross-country (negative) spillovers there could be a significant impact on the devaluing country's inflation through higher import price from the euro area. A unilateral devaluation by one country, assuming that there is no response by any other country, will have a positive short-term impact for exports, but a negative effect in terms of higher imported inflation from the euro area. The aggregate effect for the EU and the euro area, also shown in Tables 3 and 4, allow us to produce ballpark estimates for these effects. For example, a 20 percent devaluation by the Czech Republic will lead to a 5½ percent higher inflation as a result of an higher import prices from the euro area; these aggregate effects are shown in the last two columns of the table. Although these should be interpreted as maximum (long-run) effects—since they are based on the assumption of complete pass through from exchange rates to prices—they are nevertheless significant. Trade integration has advanced significantly among these countries and large swings in exchange rates are bound to have a major impact on trade flows and prices.

On the whole, it would appear that exchange rate stability is warranted, especially during the period of convergence relative to the Maastricht criteria. Although one could argue that exchange rate flexibility could be useful, especially given the dynamics of real convergence in these countries, the Maastricht criteria were essentially designed to be complemented with enhanced policy coordination, and hence diminished exchange rate variability and monetary policy autonomy. The simple exercise conducted in this section illustrates that, since the temptation to profit—through an exchange rate devaluation—can be high, a fixed exchange rate arrangement provides the insurance for countries that are being assessed before adopting the euro. These simulations also reveal the sensitivity of inflation in the accession countries to large swings in exchange rates.

Monetary and Exchange Rate Policy in EMU: A case of learning by doing?

Ultimately the exchange rate arrangement is at the center of the monetary policy coordination mechanism. Countries surrender monetary policy autonomy in favour of more exchange rate stability, and gradually prepare for their participation into the monetary union. The exchange rate is no longer available as a tool for macroeconomic fine-tuning and under these circumstances flexibility of prices (and wages) becomes critical. Fiscal policy itself remains constrained (for discretionary policy management) and is allowed ultimately to act solely—through the operation of automatic stabilizers—as a shock absorbing mechanism.

Under this new environment private sector agents need to adjust their behaviour. Since exchange rate flexibility is no longer permitted, prices and wages must take the burden of adjustment. Hence, the behaviour of wage setters will also have to change and the ERM can provide some breathing space prior to the big test. In addition, participation in a quasi-fixed exchange rate system should facilitate the convergence with the euro area, both in terms of macroeconomic indicators, and institutionally. The latter is particularly important for the central bank and other financial institutions that will face a new environment after the adoption of the euro.

In what follows we examine two particular aspects: (i) the issue of inflation, and business cycle convergence which is particularly important upon the entry into the euro zone, and (ii) the question of possible changes in the monetary transmission mechanism that countries will have to face.

Inflation and GDP Synchronization with EU

Table 4 provides some indication of the extent of synchronization of the business cycles across the ten new EU countries, and with the other large euro zone members. The aggregate figures for the EU and the euro zone are also included in the same table. A number of important stylized facts stand out. First, with the exception of some groups of countries (e.g. the Baltics), business cycles are not highly synchronized across the ten new members of the EU. Secondly, a number of countries' business cycles appear to be highly synchronized with the euro area business cycle (e.g., Cyprus, Hungary). On the other hand, in the rest of the group business cycles appear to be rather idiosyncratic, with the exception of some pairs of countries (Slovenia and Estonia, Slovenia and Lithuania, for example).

One can read these stylized facts in different ways. It can be argued that business cycle correlations are relatively small and the lack of synchronization of business cycles may be a problem going forward into the euro zone. On the other hand, staying in the ERM, prior to the adoption of the euro, may be desirable as more coordination of monetary policy vis-à-vis the euro area may indeed provide the ground for increased synchronization between the euro area, and these countries. Indeed, there is ample evidence which suggests that business cycle synchronization tends to increase between countries participating in a fixed exchange rate area (Artis and Zhang, 1997, 1999, for example, and references therein). Finally, the lack of business cycle correlation across countries may simply be a symptom of widely different policies (e.g., monetary policies). Hence, when policies are more aligned inside the ERM some convergence of business cycles, may indeed take place (on this point see Kontolemis and Samiei, 2000, for example).

Of course, in a world where central bankers care primarily about keeping inflation in check, the dynamics of inflation across countries are important. Table 5 shows the correlation coefficients for annual inflation rates (top panel) and for shocks to the

consumer price index (lower panel). Inflation rates seem to be correlated although there is a spurious element to those results due to the negative trend in most of those series. When one filters out some of the systematic movements in the consumer price index (see the bottom panel of Table 5) the results become more interesting and reveal in some cases similarities in the inflation environment in some countries (e.g., Czech Republic with Hungary, and Slovakia; Hungary with Slovenia, Slovenia, and Poland; Slovenia with Hungary, and Slovakia). Interestingly, in none of these countries inflation shocks are correlated with those in the euro area.

The fact that there is a very weak correlation between inflation shocks in the candidate countries and the euro area, but in some cases strong similarity between the candidate countries themselves could indicate that other common variables might account for this stylized fact. The exchange rate is an obvious candidate and Table 6 tabulates the correlation coefficients between shocks to the effective exchange rates. The results do not reveal strong support for this assertion (i.e., large positive correlations between exchange rate shocks), although in some cases there appears to be some association (e.g., between Estonia and Latvia, the Czech republic and Poland, Hungary and Poland). If exchange rate shocks were driving inflation dynamics in these countries a natural corollary is that correlation between inflation shocks with the euro area should be expected to increase after countries irrevocably fix their intra-euro area exchange rates. Hence, a participation in the ERM should set in motion a process of convergence of inflation (shocks) which should become all the more important under the single monetary policy setting, focused on price stability.[7]

This discussion makes it clear that more analysis, perhaps using an econometric model, is needed to identify precisely the source of shocks. Nevertheless, one possible conclusion is that idiosyncratic shocks to the exchange rate will diminish under a fixed exchange rate

[7] Of course, a strong negative correlation between the effective exchange rate could also indicate that a shock to one country's exchange rate feeds through to another one. The source of this shock is important. For example, suppose that in response to a productivity shock, prices jump and the exchange rate appreciates in country A. That could imply a depreciation in country B's exchange rate and possibly a positive shock to prices, hence there would be positive correlation in inflation shocks, but negative correlation of exchange rate shocks.

regime, and should contribute to more convergence in the inflation dynamics across these countries.

Changes in the Transmission Mechanism

Exchange rate stability implies changes in the monetary policy transmission mechanism since the exchange rate is no longer a viable instrument (i.e., the exchange rate channel is closed). In a standard macro model, an unanticipated monetary tightening leads to a fall in prices and GDP. In smaller, more open, economies the exchange rate is usually an important channel through which the change in the monetary policy feeds through to GDP and prices. For example, a monetary tightening leads to an exchange rate appreciation which puts a downward pressure on prices and affects negatively GDP growth. When exchange rates are irrevocably fixed the exchange rate channel becomes less potent.[8]

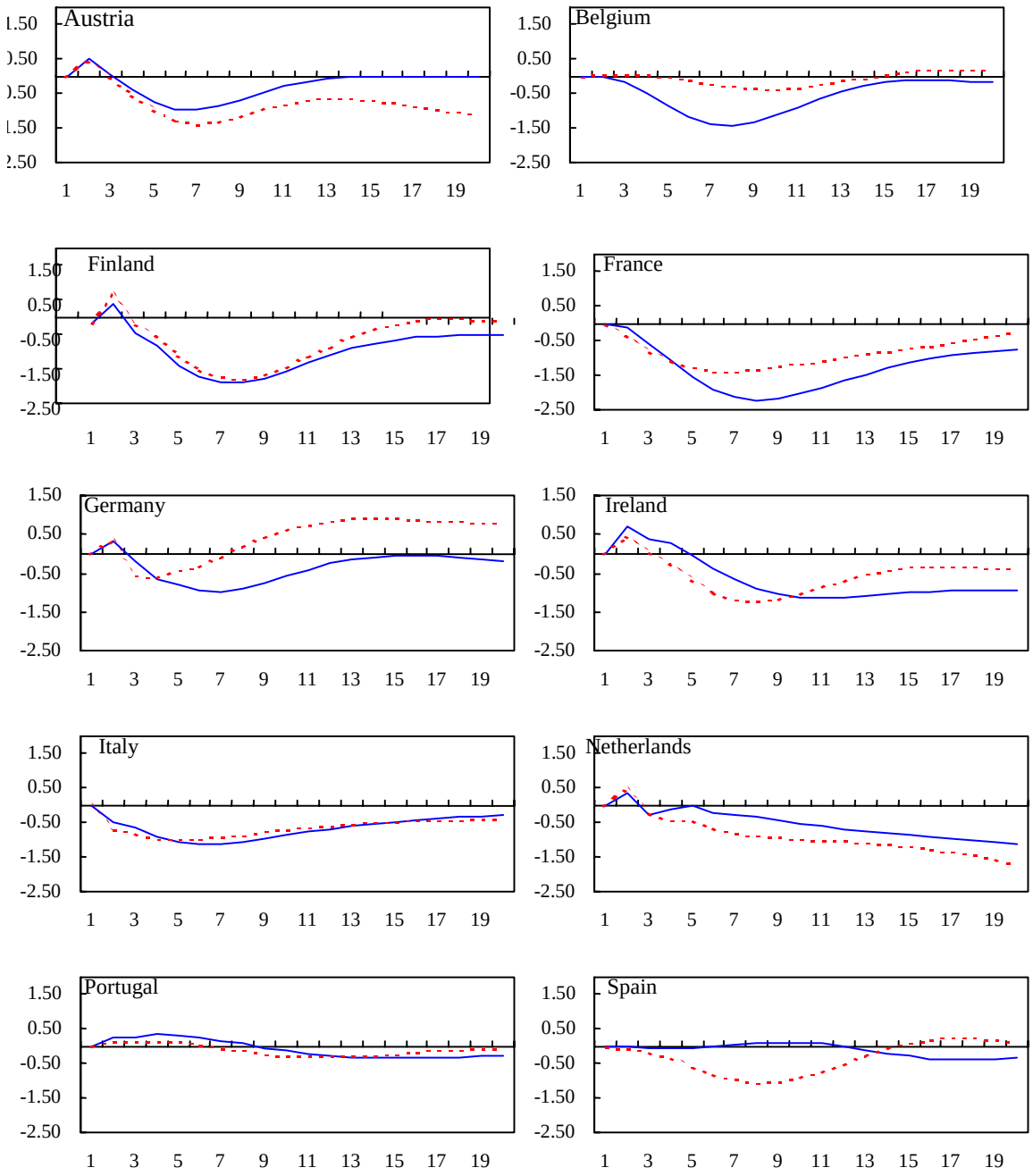
What are the policy implications for these countries? On the one hand, if countries' primary objective is price stability such a change could make disinflation more costly in terms of output loss. The exchange rate, which remains fixed, does not facilitate faster disinflation, to the extent that exchange rate changes do actually feed through to prices. Figure 3 shows the response of euro-area countries' GDP to an unanticipated monetary shock under fixed intra-euro area exchange rates, and (the dashed lines) under flexible exchange rates (see Clements, Kontolemis, and Levy, 2001). There are two stylized facts that are worth pointing out. First, the costs of disinflation will not be equally shared across a single currency area. Inside the euro area countries will need to adjust to the fact that monetary policy will be common (i.e., it will respond to a weighted average of the national shocks) and countries' transmission mechanism may differ. Secondly, for countries for which the exchange rate channel was significant (e.g., Belgium, France and

[8] For recent papers on this topic see Clements, Kontolemis and Levy (2001), Angeloni, Kashyap, Mojon, and Terlizzese (2002), and references therein.

Germany in Figure 3) a common monetary policy will, at least initially, impose significant adjustment costs.

These facts suggest that a pre-entry "acclimatization" period inside the ERM may indeed provide benefits for countries before they actually enter the more rigorous test of the common currency area. During this period countries will pursue other structural reforms/institutional changes that will bring their economies closer to the EU. In addition, it can be argued that more variability in output, that may be the consequence of "one-size-fits-all" monetary policy, may be better tackled prior to the irrevocable fixing of the exchange rates inside the euro area, especially given the somewhat weaker fiscal rules during this period. The weakening of the exchange rate channel should force more discipline to wage, and price setters. Under these circumstances, and given some leeway inside the ERM II in terms of the wider fluctuation bands, a period of "internship" inside the exchange rate mechanism should be seen as beneficial.

Figure 3. EMU Model: Effect on GDP with Fixed/Flexible Intra-EMU Exchange
(percent deviation from baseline, by



1/ Dashed lines: flexible intra-EMU exchange rate, solid lines: EMU

Source: Clements, Kontolemis, and Levy 2001.

Are there Risks, and Can Policies Help?

The preceding discussion was centered on the positive aspects of participation in the ERM. The arguments in favour of participation in a fixed exchange rate system are particularly relevant for the accession countries that are seeking to adopt the euro after they join the EU in May 2004.

What are the risks to this strategy? One issue that has been brought up is that of capital flows and the risks that these might pose to the viability of the exchange rate peg itself (see Begg et al, 2003, for example). We noted earlier that the alternative to a fixed exchange rate system, a flexible (or a managed float) exchange rate arrangement, would also involve significant risks to new member states—albeit of different nature compared a fixed exchange rate arrangement. In this section we discuss whether capital flows are indeed a new phenomenon for these countries or, unlike the existing member states, whether these countries have indeed experienced sizeable capital inflows—during their transition to market economies—and have generally managed to steer safely their economies. Second we briefly discuss whether the conventional wisdom that there exists an important trade-off between inflation and exchange rate variability is indisputable, and whether policies and institutions matter in this regard.

It is often argued that capital flows in the run-up to the euro adoption could put considerable strain on the Exchange Rate Mechanism forcing countries either to change policies, or abandon the central parity relative to the euro. Increased capital flows have been observed in Greece, for example, in the run-up to the adoption of the euro (Box 4, provides a short overview of the Greek experience inside the ERM). These flows were, for the most part, “hot money” looking to take advantage of the higher yields offered by Greek government bonds; a fall in the risk premium, which was the result of the convergence toward EMU, and higher inflation—and hence interest rate—differential were the main reasons behind the increased appetite for government paper

Box 4. ERM participation: The Greek Experience

Brief History inside the ERM

- Greece became the 12th member of the eurozone, on the January 1, 2001.
- On March 16, 1998 the Greek drachma entered the Exchange Rate Mechanism at a central parity that corresponded to a 12.3 percent devaluation of the currency. The devaluation was considered important, at that point, in light of the expected adoption of the euro, and in order to correct for an overvaluation of the drachma which would have led to a further deterioration of the current account, and weakening growth prospects (see Bank of Greece, 2003).
- The entry in to the ERM was accompanied by an announcement for speeding up structural reforms, and fiscal consolidation (through expenditure cuts of some 1 percent of GDP in 1998).
- In September 1998, the Greek government decided that it would participate in the ERM II with a wide fluctuation band (of ±15 percent), as of January 1, 1999.
- The (de facto) devaluation of the Greek currency in 1998 sparked significant inflows of capital, essentially toward high yielding government bonds that offered investors sizeable expected capital gains. As a result short-term interest rates fell by some 400 basis points compared to the pre-devaluation period. Long-term interest rates also fell by 200 basis points, and the yield curve inverted as market expectations for further interest rate cuts were bolstered.
- At that point, the authorities faced an important policy dilemma. Strong capital inflows were exerting downward pressure on interest rates during a period in which inflationary pressures abounded, thus risking the attainability of the Maastricht criterion for inflation. These were addressed, as explained below, through a series of revaluations of the exchange rate combined with sterilisation of capital inflows.
- To ensure that the target of inflation (i.e., in terms of the Maastricht criteria) would not be jeopardised, the Bank of Greece allowed a moderate appreciation of the drachma inside the band (the currency appreciated relative to the central parity on average by 7 percent during March 1998-January 2000. Effectively therefore, the (de facto) devaluation was significantly smaller than 12¼ percent (i.e., about 6 percent).
- At the same time, and to keep a lid on inflation, the Bank of Greece initiated a program of sterilisation of (part of) the capital inflows.
- In January 2000 the central parity was adjusted again, reflecting some 3.5 percent revaluation of the currency vis-à-vis the euro.
- The revaluation of the central parity in January 2000 was the last exchange rate adjustment. In June 2000 the EU Council confirmed that the central ERM parity of the drachma would the actual conversion rate for the adoption of the euro.
- The period after the last revaluation of the drachma was characterised generally by a depreciating currency, and this tendency continued until the adoption of the euro.
- During the years of membership inside the ERM II the Bank of Greece intervened on various occasions to slowdown the rate of depreciation (appreciation) of the currency inside the band

Some useful lessons from the example of Greece

- The example of Greece reminds us that entry into the ERM II should be accompanied by a strong commitment for pursuing structural reforms, and speeding up fiscal consolidation.
- The option of using wide bands inside the ERM II proved invaluable for steering the currency smoothly toward the final conversion rate.
- In addition, the wide bands also facilitated the anti-inflation policy of the authorities.
- However, discrete adjustments of the central parity may also take place and—provided that these are backed-up by credible policies,—these can be managed successfully, even in a environment with strong capital flows, and currency speculation.
- The announcement of the final conversion rate well in advance of the actual adoption of the euro was instrumental in stabilising the currency. This further contributed toward the smooth convergence of other variables (e.g., nominal interest rates).

The conditions prevailing currently in the majority of the candidate countries are considerably different. First, inflation rates in the candidate countries have converged significantly during the past few years, although productivity differences could sustain a small differential in the medium term. Consequently, it appears that that the level of nominal convergence prevailing now is significantly more advanced compared with the other EU countries in the 1980s and 1990s. Similarly, country risk premia have also come down markedly during the process of transformation of the these economies, and particularly as a result of the effective fiscal consolidation process that has taken place, and the prospective EU membership. The candidate countries have also experienced sizable capital inflows, especially in the form of foreign direct investment and portfolio flows, as these economies opened up and proceeded with the transformation of their economies. Table 7, tabulates (average, net) capital flows in the acceding, and other current member states, and presents a measure for the variability of capital flows which, in the case of some countries, has been quite significant. Data for the member states prior to the adoption of the euro (1997-2001) is also compared with previous periods (1990-1996 for most countries; but 1977-96 for Greece and 1982-96 for Spain and Portugal) corresponding to the periods prior, and just after, their accession into the EU. The data show that the candidate countries have experienced significant capital flows, especially FDI and portfolio, particularly when compared with the member states either during the period before the adoption of the euro, or earlier.[9] In addition to the high level (as a percent of GDP), flows have also been relatively more volatile in candidate countries, relative to the EU member states. These stylized observations reveal that these countries have coped relatively well in an environment of strong capital flows, and in many cases diminished—or in some cases no—exchange rate flexibility.

It remains to be seen whether in the run-up to the adoption of the euro there could indeed be significant profit opportunities that would increase significantly short-term (potentially reversible) capital flows looking for more attractive returns. As indicated before, although one cannot rule out this scenario, the fact that nominal convergence has

[9] Of course there are exceptions. During 1997-2001 Ireland received huge foreign direct investment flows, and Greece portfolio flows.

progressed significantly in these countries suggests that these flows may be smaller than in previous episodes (Table 8). Further progress is expected during the period prior to EU membership and hence before countries decide to participate in the ERM II.

Increased capital flows can put enormous pressure on fixed exchange rate regimes by pushing the exchange rate toward the top of the band. However, when the exchange rate moves toward the top of the ERM band a national central bank has unlimited reserves, since it intervenes by selling its own currency, and can easily defend the exchange rate peg. If the increased flows interfere with the other objectives of monetary policy, sterilization may also be effective in drying up excess domestic liquidity. Furthermore, as has been argued extensively in the literature, candidate countries will face an appreciation of their exchange rate during this catching-up period, a trend that would imply that exchange rates will tend to be closer to the top-, rather than the bottom-half, of the exchange rate band. However, when short-term capital flows, or "hot-money", can be reversed easily (e.g. when interest rate differentials eventually shrink) a country may be faced with strong downward pressure on its exchange rate. Even in this case, the fact that the ERM II envisages relatively wide fluctuation bands minimizes significantly the probability of a severe tension in the system. The threat of unlimited intervention at the margin should also deter the build-up of one-way bets (see Box 5 for a discussion of the limits of such intervention).

The period inside the ERM II will certainly be challenging especially as large (potentially reversible) capital flows and strong credit growth may test the commitment of policymakers and the credibility of the exchange rate system. However, policies do matter and will predetermine, to a large extent, the experience of the countries inside the ERM II. A reference to Hungary's policies in the 1990s, and more recently in 2003 can illustrate the importance of this point, particularly the significance of the policy-mix under a fixed exchange rate system. During 1998, in the aftermath of the turmoil in the international financial markets, monetary policy faced up to the pressure in the foreign exchange market and succeeded in maintaining the parity inside the narrow band of the crawling band. A solid fiscal track record in Hungary during 1998, skilful monetary and

exchange rate policies, and progress with structural reforms all contributed towards such an achievement (IMF, 1999a). In contrast, strong wage and price pressures—which led to a significant real effective exchange rate appreciation—and a highly expansionary fiscal policy brought about a conflict between the authorities' inflation and external objectives, and precipitated a series of speculative attacks in 2003 (IMF, 2003).

Fiscal policy, in particular, plays an important role in that regard. Several recent studies of currency rate crises have shown that the level of fiscal deficit as a percent of GDP—among other important variables—constitutes an important (leading) indicator for currency crises (see Edwards, 1989, Edwards and Montiel, 1989, Edwards and Santaella, 1992, Dornbusch, Goldfajn, and Valdes, 1995, Eichengreen, Rose, and Wyplosz, 1995, 1996, Frankel and Rose, 1996, Milessi-Ferretti, and Razin, 1996, IMF, 1999b, for example, and other references therein). Hence, one can infer that the enhanced fiscal discipline and coordination mechanisms within the EU, and the euro area, should—ceteris paribus—reduce considerably the risk of a currency crisis during participation in the ERM-II.

Leaving aside the issue of capital flows, another interesting question is whether a given monetary policy strategy can be successful in delivering low inflation and stable exchange rate within the ERM II. Another one is whether different policy regimes and institutions may be more effective in stabilizing the exchange rate inside the ERM. The Council stated explicitly that the ERM II is flexible enough to accommodate the features of a number of existing exchange rate strategies.[10] This has been taken to imply that countries operating inflation targeting regimes could, in principle,

[10] The only clear incompatibilities with the ERM II are the cases of free floating, crawling pegs, pegs against third currencies, and a unilateral euroisation.

Box 5: Exchange Rate Mechanism: How much intervention at the margin?

According to the operating procedures for the exchange rate mechanism, agreed between the ECB and the National Central Banks, intervention at the margins will "in principle" be automatic and unlimited (see Official Journal of the European Communities, 1998). However, the ECB and the participating National Central Bank may suspend automatic *intervention if that is deemed as conflicting with their primary objective*. The question is what does this mean in practise, assuming that both party's objective is to preserve price stability?

- If there is pressure at the bottom of the band the risk is simply that the expansion of the euro area money supply might threaten the attainment of the ECB's primary objective. However, the Table below shows that the countries in question are rather small and the share of their money supply, relative to that of the euro area, is insignificant.
- Even if the amounts were noteworthy, and the euro-area money supply increased significantly, there is doubt as to the effect that such a "velocity shock" would pose on price stability; particularly in the short-run.
- If there is pressure at the top of the band the burden—in terms of the risk to price stability—falls to the candidate country. However, the country may choose to invoke Article 17 of the agreement and ask for a revaluation, or continue with a sterilised intervention at the margin. In that case, intervention implies an increase in the country's reserves, and hence can be considered as a credible threat against market pressure.
- A decision to suspend intervention, according to the agreement, should be based on "factual evidence" (Article 3.2).

Hence, the "suspension clause" is unlikely to be invoked easily. In the case of larger economies this may indeed be a more important issue, especially when a currency is drifting at the lower part of the band. However, even in this case the "suspension clause" might minimize, to a certain extent, the build-up of "one-way" bets against these currencies.

Relative size of Candidate Countries' Money Supply and Reserves
(Data based on 2002, unless otherwise stated)

	M1, % of euro-area M1	Foreign currency reserves, % of euro-area M1	Foreign currency reserves, % of euro-area M3
Cyprus	0.08	0.14	0.05
Czech Rep	1.16	1.11	0.42
Estonia	0.08	0.05	0.02
Hungary	0.52 1/	0.46	0.17
Latvia	0.09	0.06	0.02
Lithuania	0.09 1/	0.11	0.04
Malta	0.08 1/	0.08	0.03 1/
Poland	1.22 1/	1.20	0.45 1/
Slovakia	0.25 1/	0.42	0.16
Slovenia	0.10	0.33	0.12

Source: International Financial Statistics, IMF; European Central Bank.
1/ Data for 2001.

continue with their existing monetary policy strategies so long as exchange rate stability is not threatened.

Institutions matter in this regard. Kuttner and Posen (2001) point out that the traditional description of exchange rate regimes either in the corner or in the middle between irrevocably fixed and flexible exchange rates is rather misleading and they propose instead a "three-dimensional" view of monetary framework.[11] The latter takes into account the degree of autonomy of the central bank, and the transparency of its monetary targets, and suggests that the performance of free floaters might vary according to these characteristics. Interestingly, they show that those floaters that have independent central banks, and which have inflation targeting regimes, experience similar levels of exchange rate volatility to countries with hard pegs. Kuttner and Posen's (2001) interpretation is that since monetary policy actions eventually dominate the portfolio balance ("one-off") effects of (sterilized) interventions, central bank independence discourages frequent interventions by the relevant authority (which in many countries lies within the authority of the Ministry of Finance, or is shared between the Central Bank and the Ministry of Finance). In addition, it is argued that independent central banks (frequently committed to keeping inflation in check) are more effective in communicating their policy intentions and in pinning-down inflation expectations, hence anchoring exchange rate expectations (see Kuttner and Posen, 2001, 2003, for example). In contrast, when central banks are less independent (sterilized) interventions can increase uncertainty about, on the one hand, the sustainability of the exchange rate and, on the other hand, the ability of the central bank to deliver on its domestic priorities.

Needless to say, that granting of independence to central banks in various countries has proceeded hand-in-hand with the adoption of inflation targeting as a formal monetary policy strategy. Calvo and Reinhart (2002) argue that a strong commitment to an inflation target reduces both the variance of the exchange rate, and of interest rates. This is due to the fact that the monetary authorities offset more vigorously money demand

[11] An interesting survey on exchange rate regimes is Mussa et al (2000), for example. A discussion on the pro and cons of exchange rate regimes for emerging market economies can be found in ECB (2003).

shocks, thus smoothing nominal interest rates and inflation. Detken and Gaspar (2003) show that exchange rate variability can be reduced, more generally, the more weight monetary authorities place on stabilizing inflation relative to output. In essence, these papers seem to argue that exchange rate stability can be the outcome of credible policies, aimed at controlling inflation, and is not exclusively the outcome of hard-pegs.

Hence, based on this view, the experiences of new member states could differ significantly from what the traditional "bi-polar" view might suggest. The establishment of independent central banks—which has been completed as part of the accession negotiations for EU entry—in all candidate countries should certainly contribute toward a more stable economic environment, better communication and execution of monetary policy and perhaps more exchange rate stability. Finally, it must be stressed that participation into the ERM is only but a temporary arrangement and countries have a clear exit strategy in place that, if carefully implemented, should lead to a smooth transition to Economic and Monetary Union.

Some Conclusions

This paper discusses the reasoning behind the exchange rate policies set out in the Maastricht Treaty. The question of the appropriate exchange rate policies for new member states of the European Union is seen from the wider perspective of Economic and Monetary Union, and the creation of a single market.

It is argued that exchange rate stability, per se, may be desirable. Exchange rate stability promotes trade and hence may contribute to stronger growth in the long run. Additionally, exchange rate stability may further lead to less inflation variability, and possibly to lower inflation, but in addition it may encourage governments into pursuing more prudent fiscal policies.

The alternative of floating exchange rates may impose significant risks to countries which prepare to fix their exchange rates permanently vis-à-vis the euro. Exchange rates can drift out of line from fundamentals and countries may find themselves in a difficult position to choose an "unfavourable" exchange rate for entering into the monetary union. Instead, it is argued that an exchange rate mechanism provides an insurance for new member states, in the run-up to adopting the euro, and in addition prevents unilateral exchange rate changes that could hurt other countries' chances from meeting the Maastricht criteria.

The possible changes in the monetary policy transmission mechanism call for a period of "internship" inside the exchange rate mechanism which will allow some time for countries to begin adjusting their behaviour/policies to the requirements of a common currency area. That period inside the ERM II should also lead to more convergence in prices and business cycles.

The possibility of disruptions, or volatility in the exchange rate markets, as a result of strong capital flows cannot be ruled out. Nonetheless, it is argued that these countries have experienced sizeable inflows for several years—significantly more than many EU member states,—and have managed successfully to steer their economies clear of these volatile episodes. The level of nominal convergence of these countries vis-à-vis the EU has also advanced significantly, limiting the risk of exchange rate instability due to increased short-term capital flows, or hot-money (i.e., flows into government paper due to significant interest rate differentials, as was the case in Greece, for example). Additionally, the enhanced fiscal discipline and coordination mechanisms within the EU, and the euro area, should—ceteris paribus—reduce considerably the risk of a currency crisis during participation in the ERM-II.

Institutions also matter and the establishment of independent central banks, with clear orientation for monetary policy, and transparent communication arrangements—in combination with the discipline of a target zone—should help in limiting excessive exchange rate volatility inside the exchange rate mechanism. Certainly, the flexibility of the system will also be key in delivering stability and ensuing a smooth transition toward the adoption of the euro.

Hence, participation in ERM should be considered as an opportunity to achieve meaningful macroeconomic, and policy, convergence prior to the adoption of the euro, prepare for the single monetary policy framework, and create conditions that are conducive to trade creation and growth inside the European Union, and not a mere *ad hoc* test for exchange rate stability.

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Table 1: Likely impact of Devaluation by one country in the run-up to the euro

Country i	Effect on Candidate Country j				
	Inflation	Output	Budget Deficit	Public Debt	Interest Rate
Exchange Rate Appreciation	Worsen	Improve	Improve	More likely to improve	More likely to go up
Exchange Rate Depreciation	Improve	Worsen	Worsen	More likely to worsen	More likely to decline

Table 2: Impact of a 20 percent devaluation by one country on Trade Balance, GDP growth and inflation

Effect on the Trade Balance, GDP Growth (% of GDP)

Devaluing Country

	Hungary	Cyprus	Czech Rep	Estonia	Latvia	Lithuania	Malta	Poland	Slovakia	Slovenia	France	Germany	Italy	Spain	EU	Euro Area
Hungary		-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.08	-0.13	-0.08	-0.07	-0.20	-0.19
Cyprus	-0.32		-0.32	-0.32	-0.32	-0.32	-0.32	-0.32	-0.32	-0.32	-0.32	-0.32	-0.33	-0.32	-0.37	-0.35
Czech Rep	-0.11	-0.10		-0.10	-0.10	-0.10	-0.10	-0.11	-0.12	-0.10	-0.11	-0.16	-0.11	-0.11	-0.21	-0.20
Estonia	-0.22	-0.21	-0.22		-0.23	-0.22	-0.21	-0.22	-0.21	-0.21	-0.22	-0.24	-0.22	-0.22	-0.33	-0.29
Latvia	-0.21	-0.21	-0.21	-0.22		-0.22	-0.21	-0.22	-0.21	-0.21	-0.21	-0.23	-0.21	-0.21	-0.28	-0.26
Lithuania	-0.16	-0.16	-0.16	-0.17	-0.17		-0.16	-0.17	-0.16	-0.16	-0.17	-0.18	-0.17	-0.16	-0.22	-0.20
Malta	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20		-0.20	-0.20	-0.20	-0.23	-0.22	-0.23	-0.20	-0.34	-0.31
Poland	-0.12	-0.11	-0.12	-0.11	-0.11	-0.12	-0.11		-0.12	-0.11	-0.12	-0.13	-0.12	-0.12	-0.16	-0.16
Slovakia	-0.21	-0.20	-0.24	-0.20	-0.20	-0.20	-0.20	-0.21		-0.20	-0.21	-0.23	-0.21	-0.20	-0.27	-0.26
Slovenia	-0.19	-0.18	-0.19	-0.18	-0.18	-0.18	-0.18	-0.19	-0.19		-0.19	-0.21	-0.20	-0.19	-0.26	-0.26
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		-0.02	-0.01	-0.01	-0.06	-0.05
Germany	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03		0.03	0.04	-0.01	0.00
Italy	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	-0.01		0.00	-0.04	-0.03
Spain	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.08	-0.08	-0.08		-0.13	-0.12

Effect on Inflation

Impact on	Hungary	Cyprus	Czech Rep	Estonia	Latvia	Lithuania	Malta	Poland	Slovakia	Slovenia	France	Germany	Italy	Spain	EU	Euro Area
Hungary		0.00	-0.26	-0.01	0.00	0.00	-0.01	-0.29	-0.21	-0.06	-0.54	-2.72	-0.86	-0.22	-6.36	-5.81
Cyprus	-0.02		-0.02	0.00	0.00	0.00	-0.04	-0.02	-0.01	-0.01	-0.37	-0.53	-0.74	-0.29	-4.17	-3.27
Czech Rep	-0.20	0.00		0.00	0.00	-0.01	0.00	-0.46	-0.66	-0.07	-0.50	-2.96	-0.57	-0.22	-5.99	-5.48
Estonia	-0.09	0.00	-0.14		-0.33	-0.39	0.00	-0.35	-0.03	-0.02	-0.37	-1.58	-0.50	-0.13	-6.96	-5.36
Latvia	-0.09	0.00	-0.12	-0.56		-0.74	0.00	-0.46	-0.04	-0.02	-0.21	-1.42	-0.34	-0.11	-4.37	-3.43
Lithuania	-0.09	0.00	-0.13	-0.11	-0.15		0.00	-0.47	-0.02	-0.04	-0.31	-1.45	-0.36	-0.10	-3.58	-2.93
Malta	-0.04	-0.01	-0.03	0.00	0.00	0.00		-0.03	0.00	0.00	-2.12	-1.25	-2.61	-0.37	-8.90	-7.25
Poland	-0.09	0.00	-0.19	0.00	0.00	-0.03	0.00		-0.08	-0.03	-0.36	-1.18	-0.43	-0.14	-3.10	-2.68
Slovakia	-0.28	0.00	-1.95	0.00	-0.01	0.00	0.00	-0.41		-0.06	-0.44	-1.66	-0.56	-0.13	-4.10	-3.69
Slovenia	-0.29	0.00	-0.21	0.00	0.00	0.00	-0.01	-0.12	-0.11		-0.57	-1.60	-1.52	-0.17	-5.39	-4.98
France	-0.03	0.00	-0.02	0.00	0.00	-0.01	-0.01	0.00	-0.03	-0.01		-0.75	-0.40	-0.31	-2.57	-2.14
Germany	-0.11	0.00	-0.14	0.00	0.00	-0.01	-0.02	0.00	-0.13	-0.04	-0.50		-0.34	-0.15	-2.52	-1.98
Italy	-0.03	0.00	-0.02	0.00	0.00	0.00	-0.02	0.00	-0.04	-0.02	-0.48	-0.76		-0.18	-2.29	-1.99
Spain	-0.02	0.00	-0.02	0.00	0.00	-0.01	0.00	0.00	-0.02	-0.01	-0.89	-0.83	-0.49		-3.35	-2.87

Table 3: Impact of a 20 percent devaluation by one country on Trade Balance, GDP growth and inflation
(taking into account inflationary impact of devaluation)

Effect on the Trade Balance, GDP Growth (% of GDP)
Devaluing Country

Impact on	Hungary	Cyprus	Czech Rep	Estonia	Latvia	Lithuania	Malta	Poland	Slovakia	Slovenia	France	Germany	Italy	Spain	EU	Euro Area
Hungary		-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.08	-0.12	-0.08	-0.07	-0.18	-0.17
Cyprus	-0.32		-0.32	-0.32	-0.32	-0.32	-0.32	-0.32	-0.32	-0.32	-0.32	-0.32	-0.33	-0.32	-0.36	-0.35
Czech Rep	-0.11	-0.10		-0.10	-0.10	-0.10	-0.10	-0.11	-0.12	-0.10	-0.11	-0.15	-0.11	-0.11	-0.20	-0.19
Estonia	-0.22	-0.21	-0.22		-0.23	-0.22	-0.21	-0.22	-0.21	-0.21	-0.22	-0.24	-0.22	-0.22	-0.31	-0.29
Latvia	-0.21	-0.21	-0.21	-0.22		-0.22	-0.21	-0.22	-0.21	-0.21	-0.21	-0.23	-0.21	-0.21	-0.27	-0.25
Lithuania	-0.16	-0.16	-0.16	-0.17	-0.17		-0.16	-0.17	-0.16	-0.16	-0.17	-0.18	-0.17	-0.16	-0.22	-0.20
Malta	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20		-0.20	-0.20	-0.20	-0.23	-0.22	-0.22	-0.20	-0.31	-0.29
Poland	-0.12	-0.11	-0.12	-0.11	-0.11	-0.12	-0.11		-0.12	-0.11	-0.12	-0.13	-0.12	-0.12	-0.16	-0.15
Slovakia	-0.21	-0.20	-0.24	-0.20	-0.20	-0.20	-0.20	-0.21		-0.20	-0.21	-0.23	-0.21	-0.20	-0.26	-0.26
Slovenia	-0.19	-0.18	-0.19	-0.18	-0.18	-0.18	-0.18	-0.19	-0.19		-0.19	-0.21	-0.20	-0.19	-0.26	-0.25
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		-0.02	-0.01	-0.01	-0.05	-0.04
Germany	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03		0.03	0.04	-0.01	0.00
Italy	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	-0.01		0.00	-0.04	-0.03
Spain	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.08	-0.08	-0.07		-0.12	-0.12

Effect on Inflation

Impact on	Hungary	Cyprus	Czech Rep	Estonia	Latvia	Lithuania	Malta	Poland	Slovakia	Slovenia	France	Germany	Italy	Spain	EU	Euro Area
Hungary		0.00	-0.26	-0.01	0.00	0.00	-0.01	-0.29	-0.21	-0.06	-0.54	-2.72	-0.86	-0.22	-6.36	-5.81
Cyprus	-0.02		-0.02	0.00	0.00	0.00	-0.04	-0.02	-0.01	-0.01	-0.37	-0.53	-0.74	-0.29	-4.17	-3.27
Czech Rep	-0.20	0.00		0.00	0.00	-0.01	0.00	-0.46	-0.66	-0.07	-0.50	-2.96	-0.57	-0.22	-5.99	-5.48
Estonia	-0.09	0.00	-0.14		-0.33	-0.39	0.00	-0.35	-0.03	-0.02	-0.37	-1.58	-0.50	-0.13	-6.96	-5.36
Latvia	-0.09	0.00	-0.12	-0.56		-0.74	0.00	-0.46	-0.04	-0.02	-0.21	-1.42	-0.34	-0.11	-4.37	-3.43
Lithuania	-0.09	0.00	-0.13	-0.11	-0.15		0.00	-0.47	-0.02	-0.04	-0.31	-1.45	-0.36	-0.10	-3.58	-2.93
Malta	-0.04	-0.01	-0.03	0.00	0.00	0.00		-0.03	0.00	0.00	-2.12	-1.25	-2.61	-0.37	-8.90	-7.25
Poland	-0.09	0.00	-0.19	0.00	0.00	-0.03	0.00		-0.08	-0.03	-0.36	-1.18	-0.43	-0.14	-3.10	-2.68
Slovakia	-0.28	0.00	-1.95	0.00	-0.01	0.00	0.00	-0.41		-0.06	-0.44	-1.66	-0.56	-0.13	-4.10	-3.69
Slovenia	-0.29	0.00	-0.21	0.00	0.00	0.00	-0.01	-0.12	-0.11		-0.57	-1.60	-1.52	-0.17	-5.39	-4.98
France	-0.03	0.00	-0.02	0.00	0.00	-0.01	-0.01	0.00	-0.03	-0.01		-0.75	-0.40	-0.31	-2.57	-2.14
Germany	-0.11	0.00	-0.14	0.00	0.00	-0.01	-0.02	0.00	-0.13	-0.04	-0.50		-0.34	-0.15	-2.52	-1.98
Italy	-0.03	0.00	-0.02	0.00	0.00	0.00	-0.02	0.00	-0.04	-0.02	-0.48	-0.76		-0.18	-2.29	-1.99
Spain	-0.02	0.00	-0.02	0.00	0.00	-0.01	0.00	0.00	-0.02	-0.01	-0.89	-0.83	-0.49		-3.35	-2.87

Table 4: GDP Growth Correlations (1996-2001)

	CY	CZ	EE	HU	LI	LA	MA	PO	SL	SLO	EU	Euro	GER	FR	IT
CY	1.00														
CZ	-0.22	1.00													
EE	-0.29	-0.08	1.00												
HU	0.73	-0.59	0.28	1.00											
LI	-0.41	0.07	0.85	-0.04	1.00										
LA	-0.08	-0.03	0.86	0.41	0.73	1.00									
MA	-0.02	-0.19	0.20	0.23	-0.18	-0.17	1.00								
PO	-0.57	-0.36	0.31	-0.16	0.15	-0.14	0.72	1.00							
SL	0.26	-0.43	-0.16	0.46	-0.63	-0.23	0.74	0.39	1.00						
SLO	-0.85	0.00	0.54	-0.51	0.74	0.24	0.00	0.61	-0.45	1.00					
EU	0.64	-0.45	0.08	0.78	-0.32	-0.05	0.73	0.21	0.75	-0.50	1.00				
Euro	0.88	-0.13	0.04	0.81	-0.14	0.36	-0.15	-0.68	0.14	-0.76	0.51	1.00			
GER	0.68	-0.29	-0.01	0.71	-0.39	-0.11	0.72	0.12	0.72	-0.59	0.98	0.54	1.00		
FR	0.90	-0.37	-0.16	0.81	-0.43	-0.13	0.40	-0.18	0.55	-0.75	0.90	0.74	0.92	1.00	
IT	0.56	-0.07	0.52	0.80	0.14	0.57	0.39	-0.16	0.35	-0.41	0.71	0.75	0.72	0.66	1.00

Table 5: Correlation of Annual Inflation Rates, and Inflation Shocks (1993-2002)

	CY	CZ	EE	HU	LA	LI	MA	PO	SLO	SL	Eurozone
CY	1.00										
CZ	0.44	1.00									
EE	0.53	0.74	1.00								
HU	0.22	0.64	0.60	1.00							
LA	0.50	0.75	0.95	0.52	1.00						
LI	0.46	0.74	0.80	0.31	0.92	1.00					
MA	0.41	0.53	0.53	0.40	0.50	0.46	1.00				
PO	0.55	0.74	0.87	0.79	0.77	0.59	0.59	1.00			
SLO	0.56	0.50	0.57	0.20	0.62	0.72	0.51	0.58	1.00		
SL	0.64	0.70	0.89	0.47	0.81	0.72	0.66	0.89	0.72	1.00	
Eurozone	0.42	0.36	0.58	0.30	0.54	0.50	0.55	0.53	0.48	0.69	1.00

Correlation of Inflation Shocks 1/

	CY	CZ	EE	HU	LA	LI	MA	PO	SLO	SL	Eurozone
CY	1.00										
CZ	-0.05	1.00									
EE	-0.08	0.02	1.00								
HU	-0.03	0.59	0.09	1.00							
LA	-0.13	0.17	0.31	0.23	1.00						
LI	0.03	-0.11	-0.12	-0.09	-0.22	1.00					
MA	-0.02	-0.16	0.08	0.18	0.15	0.10	1.00				
PO	-0.10	0.29	0.10	0.56	0.21	0.05	0.10	1.00			
SLO	0.07	0.56	-0.07	0.60	0.04	-0.20	0.03	0.25	1.00		
SL	0.05	0.37	0.09	0.55	0.21	0.02	0.15	0.37	0.46	1.00	
Eurozone	0.03	0.08	-0.03	0.10	-0.05	-0.03	0.02	0.14	0.18	0.16	1.00

1/ Inflation shocks identified through a simple autoregressive model AR(2); for Cyprus and Malta seasonal dummies were used; for the rest of the countries a trend was added in the regressions. Based on monthly observations.

Table 6: Correlation Coefficients of Shocks to Nominal Effective Exchange Rates (1993-2002) 1/

	CY	CZ	EE	HU	LA	LI	MA	PO	SLO	SL	Euro
CY	1.00										
CZ	0.01	1.00									
EE	0.26	0.03	1.00								
HU	-0.07	0.05	-0.21	1.00							
LA	-0.01	-0.02	0.84	-0.21	1.00						
LI	-0.09	-0.01	0.76	-0.13	0.95	1.00					
MA	-0.30	-0.15	-0.23	-0.22	-0.13	-0.13	1.00				
PO	-0.15	0.22	-0.27	0.26	-0.28	-0.26	0.19	1.00			
SLO	-0.05	-0.58	-0.14	0.04	-0.09	-0.11	0.16	-0.01	1.00		
SL	0.35	0.02	0.70	-0.38	0.54	0.46	-0.05	-0.34	-0.09	1.00	
Euro	0.80	0.11	0.56	-0.11	0.26	0.17	-0.48	-0.30	-0.18	0.58	1.00

1/ Based on monthly observations of nominal effective exchange rates. Shocks identified using an AR(2) process; regressions included a deterministic trend.

Table 7. Capital Flows: Candidate Countries, and EU Member States (net flows)

	Level (% of GDP)						Variability (Standard deviation)					
	1997-2001			1990-1996 (unless otherwise indicated) 1/			1997-2001			1990-1996 (unless otherwise indicated) 1/		
	FDI	Portfolio	Other Capital Flows	FDI	Portfolio	Other Capital Flows	FDI	Portfolio	Other Capital Flows	FDI	Portfolio	Other Capital Flows
Cyprus	-0.16	6.64	0.31				1.45	1.39	1.37			
Czech Rep	7.62	-2.03	-0.18				0.43	3.44	1.82			
Estonia	6.10	1.81	1.81				3.45	1.92	2.76			
Hungary	3.43	-0.31	1.72				3.08	4.59	1.65			
Latvia	3.25	2.31	2.29				0.64	3.58	2.87			
Lithuania	7.83	5.62	-1.05				1.43	2.59	1.95			
Malta	10.92	5.10	-11.41				4.13	2.29	4.96			
Poland	4.14	0.39	1.08				7.66	5.29	11.77			
Slovakia	4.37	2.04	0.91				1.03	2.25	0.90			
Slovenia	0.97	4.07	0.89				0.86	1.50	1.67			
Average	4.85	2.56	-0.36				2.42	2.88	3.17			
Denmark	0.70	-3.58	3.38	-0.12	2.62	-3.37	2.62	5.32	1.64	0.63	5.33	5.72
Germany	0.11	-1.76	1.70	-1.05	1.95	0.42	4.67	3.71	1.71	0.43	2.47	2.79
France	-3.81	-0.28	1.61	-0.55	-0.08	0.27	3.67	2.39	2.45	0.71	2.75	2.45
Ireland	9.28	-9.89	0.79	1.62	-0.80	-4.92	7.17	8.21	11.34	0.86	3.36	2.59
Italy	-0.38	-0.74	0.41	-0.27	2.09	-1.10	0.41	1.41	1.48	0.15	3.05	3.90
Netherlands	-1.50	-3.58	2.24	-2.15	-1.79	1.50	3.01	4.41	4.43	0.96	1.40	2.59
Austria	0.82	1.28	0.04	0.08	1.52	-0.03	0.74	1.80	2.55	0.62	2.02	1.60
Finland	-5.11	-1.69	2.06	-0.89	4.02	-1.75	4.24	1.77	3.49	1.30	4.15	4.25
United Kingdom	-4.21	2.40	2.42	-0.73	-1.66	3.45	4.81	7.74	2.44	1.26	5.05	5.13
Sweden	1.83	-6.81	4.87	-0.45	-0.21	2.64	8.65	4.43	5.08	2.18	2.14	5.01
Greece	0.19	6.37	-1.13	1.12		1.42	0.86	1.46	4.65	0.15		0.00
Spain	-2.14	-1.75	4.51	1.18	1.36	-0.38	1.49	1.92	1.61	0.53	3.00	3.82
Portugal	-0.95	0.49	8.19	1.31	0.67	0.46	0.84	1.80	3.00	0.97	1.82	4.55
Average	-0.40	-1.50	2.39	-0.07	0.81	-0.11	3.32	3.57	3.53	0.83	3.05	3.42

Source: Balance of Payments Statistics, International Monetary Fund; Eurostat.

1/ For Greece 1977-96, Spain, Portugal 1982-1996.

Table 8. Interest Rates for Accession Countries and Largest EU Countries.

	Short-term 1/			Long-term
	2002	2001	2000	2003 2/
Cyprus	4.4	5.93	6.44	4.52 3/
Czech Rep	3.54	5.17	5.37	3.88
Estonia	3.38	4.45	4.68	3.52 4/
Hungary	9.21	10.86	11.39	6.43
Lithuania	3.74	5.93	8.64	5.00 5/
Latvia	3.33	6.05	4.02	4.10 6/
Malta	4.01	4.93	4.89	-
Poland	8.98	16.07	18.77	5.58
Slovenia	8.73	10.87	10.94	4.32 7/
Slovakia	7.77	7.77	8.57	5.00
Euro Area	3.32	4.26		-
France				4.13
Germany				4.11
Italy				4.32

Source: Eurostat; Bloomberg, European Central Bank.

1/ 3-month interest rates.
2/ As of 17/03/03; typically 10-year bond yields, national currency, unless otherwise stated.
3/ Maturity 2/27/2012, euro denominated.
4/ Maturity 6/26/2007, euro denominated.
5/ Maturity 5/10/2012, euro denominated.
6/ Maturity 11/27/2008, euro denominated.
7/ Maturity 4/11/2011, euro denominated.